WHAT IS CLAIMED IS:

1. A thermal physical vapor deposition source for vaporizing solid organic materials and applying a vaporized organic material as a layer onto a surface of a structure in a chamber at reduced pressure in forming an organic light-emitting device (OLED), comprising:

a) a bias heater defined by side walls and a bottom wall, the side walls having a height dimension H_B;

b) an electrically insulative container disposed in the bias heater, the container receiving solid organic material which can be vaporized, the container defined by side walls and a bottom wall, and the container side walls having a height dimension H_C which is greater than the height dimension H_B of the bias heater side walls;

c) a vaporization heater disposed on upper side wall surfaces of the container, the vaporization heater defining a vapor efflux slit aperture extending into the container for permitting vaporized organic material to pass through the slit aperture and onto the surface of the structure;

d) means for applying an electrical potential to the bias heater to cause bias heat to be applied to the solid organic material in the container, the bias heat providing a bias temperature which is insufficient to cause the solid organic material to vaporize;

e) means for applying an electrical potential to the vaporization heater to cause vaporization heat to be applied to uppermost portions of the solid organic material in the container causing such uppermost portions to vaporize so that vaporized organic material is projected onto the structure through the efflux slit aperture to provide an organic layer on the structure; and

f) means for providing relative motion between the vapor deposition source and the structure to provide a substantially uniform organic layer on the structure.

2. A thermal physical vapor deposition source for vaporizing solid organic materials and applying a vaporized organic material as a layer onto a

surface of a structure in a chamber at reduced pressure in forming an organic light-emitting device (OLED), comprising:

a) a bias heater defined by side walls and a bottom wall, the side walls having a height dimension H_B;

b) an electrically insulative container disposed in the bias heater, the container receiving solid organic material which can be vaporized, the container defined by side walls and a bottom wall, and the container side walls having a height dimension H_C which is greater than the height dimension H_B of the bias heater side walls;

c) a vaporization heater disposed on upper side wall surfaces of the container, the vaporization heater defining a vapor efflux slit aperture extending into the container for permitting vaporized organic material to pass through the slit aperture and onto the surface of the structure;

d) means for controllably applying an electrical potential to the bias heater in response to a control signal provided by a bias heater temperature-measuring device to cause controlled bias heat to be applied to the solid organic material in the container, the controlled bias heat providing a bias temperature which is insufficient to cause the solid organic material to vaporize;

e) means for controllably applying an electrical potential to the vaporization heater in response to a control signal provided by a deposition rate-measuring device to cause controlled vaporization heat to be applied to uppermost portions of the solid organic material in the container causing such uppermost portions to controllably vaporize so that vaporized organic material is projected onto the structure through the efflux slit aperture to provide an organic layer on the structure; and

f) means for providing relative motion between the vapor deposition source and the structure to provide a substantially uniform organic layer on the structure.

3. The thermal physical vapor deposition source of claim 1 wherein the solid organic material received in the container includes doped or undoped hole-injecting material, doped or undoped organic hole-transporting

material, doped or undoped organic light-emitting material, or doped or undoped organic electron-transporting material.

4. The thermal physical vapor deposition source of claim 1 wherein the electrically insulative container is constructed of quartz or of a ceramic material.

5. The thermal physical vapor deposition source of claim 3 wherein the solid organic material received in the container includes powder, flakes, or particulates, and the vaporization heater further includes a baffle member connected to the vaporization heater and spaced therefrom in a direction towards the container, the baffle member substantially preventing ejection of particles of powder, flakes, or particulates through the vapor efflux slit aperture and permitting vaporized organic material to pass through the slit aperture.

6. The thermal physical vapor deposition source of claim 3 wherein the solid organic material received in the container includes at least one solid pellet of such organic material.

7. The thermal physical vapor deposition source of claim 1 wherein the means for providing relative motion between the vapor deposition source and the structure includes a lead screw adapted either to move the source with respect to a fixedly disposed structure, or to move the structure with respect to a fixedly disposed source.

8. The thermal physical vapor deposition source of claim 2 wherein the solid organic material received in the container includes doped or undoped hole-injecting material, doped or undoped organic hole-transporting material, doped or undoped organic light-emitting material, or doped or undoped organic electron-transporting material.

9. The thermal physical vapor deposition source of claim 2 wherein the electrically insulative container is constructed of quartz or of a ceramic material.

10. The thermal physical vapor deposition source of claim 8 wherein the solid organic material received in the container includes powder, flakes, or particulates, and the vaporization heater further includes a baffle member connected to the vaporization heater and spaced therefrom in a direction towards the container, the baffle member substantially preventing ejection of particles of powder, flakes, or particulates through the vapor efflux slit aperture and permitting vaporized organic material to pass through the slit aperture.

11. The thermal physical vapor deposition source of claim 8 wherein the solid organic material received in the container includes at least one solid pellet of such organic material.

12. The thermal physical vapor deposition source of claim 2 wherein the means for providing relative motion between the vapor deposition source and the structure includes a lead screw adapted either to move the source with respect to a fixedly disposed structure, or to move the structure with respect to a fixedly disposed source.

13. The thermal physical vapor deposition source of claim 2 wherein the bias heater temperature-measuring device includes a pyrometer for measuring the temperature of the bias heater in a parked position of the vapor deposition source, the pyrometer providing a control signal corresponding to the temperature of the bias heater, and the control signal controlling a bias heater power supply for controllably applying an electrical potential to the bias heater.

14. The thermal physical vapor deposition source of claim 2 wherein the bias heater measuring device includes a thermocouple attached to the bias heater for measuring the temperature of the bias heater in at least a parked

position of the vapor deposition source, the thermocouple providing a control signal corresponding to the temperature of the bias heater, and the control signal controlling a bias heater power supply for controllably applying an electrical potential to the bias heater.

15. The thermal physical vapor deposition source of claim 1 wherein the solid organic material received in the container includes one or more organic dopant materials.

16. The thermal physical vapor deposition source of claim 2 wherein the solid organic material received in the container includes one or more organic dopant materials.

17. The thermal physical vapor deposition source of claim 1 wherein the solid organic material received in the container includes one or more organic host materials.

18. The thermal physical vapor deposition source of claim 2 wherein the solid organic material received in the container includes one or more organic host materials.